

What Is Claimed Is:

1. A signal processing apparatus for processing an image signal outputted from an image sensing device which has a plurality of photoelectric conversion elements covered with a color filter and which can be driven in a first reading method of separately reading signals from the respective photoelectric conversion elements and a second reading method of adding signals generated by the photoelectric conversion elements by at least two signals corresponding to the photoelectric conversion elements of a same color then outputting the added signals, comprising:
 - a switch that switches between the first reading method and the second reading method; and
 - a correction unit that passes signals inputted from the image sensing device without correcting positions of barycenters of the inputted signals when the first reading method is set, and corrects positions of barycenters of the inputted signals when the second reading method is set.
2. The signal processing apparatus according to claim 1, wherein said correction unit corrects the positions of barycenters of the

inputted signals so that the intervals between the barycenters become equal in the vertical direction when the second reading method is set.

5 3. The signal processing apparatus according to claim 1, further comprising a signal processing unit that applies camera signal processes suitable for signals whose color order is the same as that of the color filter to the
10 signals outputted from said correction unit.

 4. The signal processing apparatus according to claim 1, wherein said color filter has a Bayer arrangement of the three primary
15 colors, and the signals generated by the photoelectric conversion elements of the same color in every other line are added in the second reading method.

20 5. The signal processing apparatus according to claim 4, wherein, when letting signals in an even number line and signals in an odd number line subjected to the correction by said correction unit be P_{2n} and P_{2n-1} (n is a natural
25 number), respectively, and letting corrected signals in an even number line be P'_{2n} and corrected signals in an odd number line be P'_{2n-1} ,

said correction unit performs operations of:

$$P'_{2n} = 1/8 \times P_{2n-2} + 7/8 \times P_{2n} \text{ and}$$

$$P'_{2n-1} = 7/8 \times P_{2n-1} + 1/8 \times P_{2n+1}$$

5 6. An image sensing apparatus comprising:
 an image sensing device;
 a driving unit that drives said image
sensing device; and
 the image processing apparatus according to
10 claim 1.

 7. A signal processing method for
processing an image signal outputted from an image
sensing device which has a plurality of
15 photoelectric conversion elements covered with a
color filter and which can be driven in a first
reading method of separately reading signals from
the respective photoelectric conversion elements
and a second reading method of adding signals
20 generated by the photoelectric conversion elements
by at least two signals corresponding to the
photoelectric conversion elements of a same color
then outputting the added signals, comprising:
 determining which of the first reading
25 method and the second reading method is set; and
 correcting positions of barycenters of the
signals inputted from the image sensing device

when the second reading method is set.

8. The signal processing method according to claim 7, wherein in said correcting, the
5 positions of barycenters of the inputted signals are corrected so that the intervals between the barycenters become equal in the vertical direction when the second reading method is set.

10 9. The signal processing method according to claim 7, further comprising applying camera signal processes suitable for signals whose color order is the same as that of the color filter to the signals outputted from said correction unit.

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10. The signal processing method according to claim 7, wherein said color filter has a Bayer arrangement of the three primary colors, and the signals generated by the photoelectric conversion
20 elements of the same color in every other line are added in the second reading method.

11. The signal processing method according to claim 10, wherein, when letting signals in an
25 even number line and signals in an odd number line subjected to the correction by said correction unit be P_{2n} and P_{2n-1} (n is a natural number),

respectively, and letting corrected signals in an even number line be P'_{2n} and corrected signals in an odd number line be P'_{2n-1} , operations of:

$$P'_{2n} = 1/8 \times P_{2n-2} + 7/8 \times P_{2n} \text{ and}$$

$$5 \quad P'_{2n-1} = 7/8 \times P_{2n-1} + 1/8 \times P_{2n+1}$$

are performed in said correcting.

12. A storage medium, readable by an information processing apparatus, storing a
 10 program including program codes capable of realizing the signal processing method according to claim 7, the program being executable by the information processing apparatus.

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